

LEISURE CRAFT: ENGINE PERFORMANCE

Leisure Craft: Engine Performance is a course that prepares students for entry-level positions or advanced training in engine performance in leisure CRAFT. Course content focuses on motorcycles, all-terrain vehicles (ATV), jet skies, outboard motors, and garden equipment vehicles. The course covers charging and electrical systems, ignition systems, fuel delivery systems, emission systems, and diagnosis of electrical mechanical systems. Students will perform inspections, tests, and measurements for diagnosis and perform needed repairs. Education and experience simulate leisure CRAFT industry operations through the use of training aids and modules and offer school-based and work-based learning opportunities.

Prerequisite:

Transportation Core

Algebra I or Math for Technology II (may be concurrent)

Recommended Credit:

1 or 2

Recommended Grade Level(s):

11th, or 12th

Note: Standards 1 through 9 are for 1 credit. Standard 9 is for an additional 1 credit.

LEISURE CRAFT - ENGINE PERFORMANCE STANDARDS

- 1.0 Students will demonstrate leadership, citizenship, and teamwork skills required for success, in the school, community, and workplace.
- 2.0 Students will demonstrate automotive technology safety practices, including Occupational Safety and Health Administration (OSHA) and Environmental Protection Agency (EPA) requirements for a leisure craft repair facility.
- 3.0 Students will apply fundamental science concepts to leisure craft engine performance technology.
- 4.0 Students will test, diagnose, service, and repair charging and electrical systems as related to leisure CRAFT.
- 5.0 Students will test, diagnose, service, and repair ignition systems as related to leisure CRAFT.
- 6.0 Students will test, diagnose, service, and repair fuel delivery systems as related to leisure CRAFT.
- 7.0 Students will test, diagnose, service, and repair emission systems as related to leisure CRAFT.
- 8.0 Students will research, test, diagnose, service, and repair electrical mechanical systems as related to leisure CRAFT.
- 9.0 Students will properly test, diagnose, and repair leisure craft general electrical systems.
- 10.0 Students will apply leisure craft engine performance technology knowledge and skills in a specific work-based or student initiative project learning experience.

LEISURE CRAFT: ENGINE PERFORMANCE

STANDARD 1.0

Students will demonstrate leadership, citizenship, and teamwork skills required for success, in the school, community, and workplace.

LEARNING EXPECTATIONS

The student will:

- 1.1 Demonstrate positive leadership skills in the classroom and community.
- 1.2 Participate in SkillsUSA-VICA as an integral part of classroom instruction.
- 1.3 Investigate how technology has made an impact on engine performance in the past 2 years.
- 1.4 Construct a job search network.

PERFORMANCE STANDARDS: EVIDENCE STANDARD IS MET

The student:

- 1.1 Serves as a volunteer in the community.
- 1.2.A Applies the points of the creed to personal and professional situations.
- 1.2.B Completes a job search for employment opportunities.
- 1.3.A Writes a technical report that shows technological advancements in engine performance as related to leisure craft vehicles.
- 1.3.B Researches future technological projections in engine performance as relates to leisure craft vehicles.
- 1.4.A Refines employment portfolio.
- 1.4.B Assists with locating employment availability through Internet Web sites, local leisure craft service centers, and through SkillsUSA Employment Service.

SAMPLE PERFORMANCE TASKS

- Create an employment opportunity inventory and use it to locate employment.
- Participate in various SkillsUSA-VICA programs and/or competitive events.
- Analyze entry-level job skills and demonstrate proficiency in each skill.
- Attend leadership training sponsored by Tennessee SkillsUSA-VICA.
- Attend a professional organization meeting.
- Participate in the Community Service competition with SkillsUSA-VICA.

INTEGRATION LINKAGES

SkillsUSA-VICA, *Professional Development Program*, SkillsUSA-VICA, Communications and Writing Skills, Teambuilding Skills, Research, Language Arts, Sociology, Psychology, Math, Math for Technology, Applied Communications, Social Studies, Problem Solving, Interpersonal Skills, Employability Skills, Critical-Thinking Skills, Secretary's Commission on Achieving Necessary Skills (SCANS). Chamber of Commerce, Colleges, Universities, Technology Centers, and Employment Agencies

LEISURE CRAFT: ENGINE PERFORMANCE

STANDARD 2.0

Students will demonstrate leisure craft engine performance service technology safety practices, including Occupational Safety and Health Administration (OSHA) and Environmental Protection Agency (EPA) requirements for a leisure craft repair facility.

LEARNING EXPECTATIONS

The student will:

- 2.1 Determine the safe and correct application for chemicals used in leisure craft service facilities.
- 2.2 Use protective clothing and safety equipment.
- 2.3 Use fire protection equipment.
- 2.4 Follow OSHA and EPA regulations affecting leisure CRAFT.
- 2.5 Respond to safety communications.

PERFORMANCE STANDARDS: EVIDENCE STANDARD IS MET

The student:

- 2.1.A Conforms to federal, state, and local regulations when handling, storing, and disposing of chemicals.
- 2.1.B Ensures proper ventilation for chemical use.
- 2.1.C Locates first aid supplies.
- 2.2.A Demonstrates proper usage of special safety equipment.
- 2.2.B Selects and uses the appropriate protective clothing for a given task.
- 2.2.C Demonstrates the use of eye protection.
- 2.3.A Distinguishes the proper fire extinguisher for each class of fire.
- 2.3.B Demonstrates the proper use of a fire extinguisher.
- 2.4.A Locates regulatory information.
- 2.4.B Extracts information from Material Safety Data Sheets pertaining to shop chemicals.
- 2.4.C Complies with relevant regulations and standards.
- 2.4.D Passes with 100% accuracy a written examination relating specifically to electrical and electronic safety issues.
- 2.4.E Passes with 100% accuracy a performance examination relating specifically to electrical and electronic tools and equipment.
- 2.4.F Maintains a portfolio record of written safety examinations and equipment examinations for which the student has passed an operational checkout by the instructor.
- 2.5.A Interprets safety signs and symbols.
- 2.5.B Complies with safety signs and symbols.
- 2.5.C Implements manufacturer's safety guidelines.

SAMPLE PERFORMANCE TASKS

- Assess the work area for safety hazards.
- Design a corrections program for identified hazards.
- Model the appropriate protective equipment for an assigned task.

INTEGRATION LINKAGES

Math, Science, Communication Skills, Teamwork Skills, Reading Skills, Leadership Skills, Secretary's Commission on Achieving Necessary Skills (SCANA), National Institute for Automotive Service Excellence (ASE), American Power Boat Association (APBA), Occupational Safety and Health Administration (OSHA), Environmental Protection Agency (EPA), SkillsUSA-VICA

LEISURE CRAFT: ENGINE PERFORMANCE

STANDARD 3.0

Students will apply fundamental science concepts to leisure craft engine performance technology.

LEARNING EXPECTATIONS

The student will:

- 3.1 Examine how physics concepts and laws apply to leisure craft engine performance.
- 3.2 Analyze the functions and operation of leisure craft engines and fuel systems.
- 3.3 Analyze the functions and operation of leisure craft ignition systems and emission systems.

PERFORMANCE STANDARDS: EVIDENCE STANDARD IS MET

The student:

- 3.1.A Correlates the following concepts with their role in leisure craft engines:
 - hydrocarbon combustion
 - energy
 - heat
 - temperature
 - pressure
 - speed
 - work
 - torque
 - horsepower
- 3.1.B Explores the thermal expansion of fluids and solids.
- 3.1.C Differentiates between volumetric and mass efficiency.
- 3.1.D Illustrates how motion converts to heat energy.
- 3.1.E Relates atmospheric pressure to the term vacuum.
- 3.1.F Determines how Boyle's law of constant temperature and Charles's law of constant volume apply to leisure craft engine performance.
- 3.2.A Differentiates between bore, stroke, and displacement.
- 3.2.B Calculates engine compression ratio.
- 3.2.C Illustrates the Otto or four-stroke cycle of operation.
- 3.2.D Analyzes the operation of the primary fuel system, including fuel tank, pumps, filters, fittings, and lines.
- 3.2.E Analyzes the operation of an electronic fuel injection system, including speed density, mass airflow, airflow meter, throttle bodies, idle controls, and injectors.
- 3.3.A Distinguishes between the different types of emission systems and illustrates their operation.
- 3.3.B Distinguishes between the different types of catalytic converters and illustrates their operation.
- 3.3.C Analyzes the operation of distributor and distributorless ignition systems and components.

SAMPLE PERFORMANCE TASKS

- Calculate engine compression ratio.
- Diagram the following systems and identify the forces and principles at work in the operation of each:
 - primary fuel system
 - electronic fuel injection system
 - exhaust system
 - ignition system

INTEGRATION LINKAGES

Mathematics, Math for Technology, Science, Electronics, Chemistry, Physics, Applied Communications, Technical Writing, Problem-Solving and Critical Thinking Skills, Occupational Safety and Health Administration (OSHA), Tennessee Occupational Safety and Health Administration (TOSHA), Environment Protection Agency (EPA), SkillsUSA-VICA, Interpersonal Skills, Employability Skills, Secretary's Commission on Achieving Necessary Skills (SCANS)

LEISURE CRAFT: ENGINE PERFORMANCE

STANDARD 4.0

Students will test, diagnosis, service, and repair charging and electrical systems as related to leisure CRAFT.

LEARNING EXPECTATIONS

The student will:

- 4.1 Illustrate the application of Ohm's law to charging and electrical systems related to leisure craft.
- 4.2 Interpret schematics, diagrams, and reference information used in leisure craft electrical systems.
- 4.3 Use strategy based diagnostics for determining the cause of a fault in an electrical circuit.
- 4.4 Test, diagnose, and service batteries.
- 4.5 Test, diagnose, and service light systems.

PERFORMANCE STANDARDS: EVIDENCE STANDARD IS MET

The student:

- 4.1.A Comprehends and follows a safety checklist while working with charging and electrical systems.
- 4.1.B Distinguishes between DC (direct current) and AC (alternating current).
- 4.1.C Deduces the cause and effect relationship in Ohm's law between voltage, current, resistance, and voltage drop.
- 4.1.D Illustrates the concepts of valence, voltage, current, resistance, and voltage drop.
- 4.1.E Demonstrates safe practices while diagnosing, testing, and charging electrical systems related to leisure craft.
- 4.2.A Interprets wiring diagrams.
- 4.2.B Uses wiring diagrams during diagnosis of electrical circuits problems.
- 4.2.C Extracts technical information from service manuals, graphs, and charts and applies information to solve problems..
- 4.3.A Uses the service manual and electronic service information (ESI) to aid in diagnosis of an electrical circuit fault.
- 4.3.B Checks electrical circuits using a test light, scan tool, digital multimeter (DMM), jumper wires, ammeter, voltmeter, oscilloscope, and ohmmeter.
- 4.3.C Performs solder repair on electrical wiring.
- 4.3.D Implements strategy based diagnostic procedure by verifying the complaint, defining the problem, isolating the problem, validating the problem, making repairs, and testing the repairs in an electrical system or training aid.
- 4.4.A Analyzes the function and operation of a battery.
- 4.4.B Diagnoses battery problems.
- 4.4.C Performs battery services.
- 4.5.A Illustrates the operation of lighting systems including brake lights and turn signals.
- 4.5.B Pinpoints the location of switches that activate lighting systems.
- 4.5.C Tests and replaces fuses and fusible links.

SAMPLE PERFORMANCE TASKS

- Working in teams, diagnose problems in a circuit and make recommendations for service.
- Using case scenarios follow strategy based diagnostic procedure to verify the complaint, define the problem, isolate the problem, validate the problem, make the repair, and test the repair. Complete a repair order using technical writing skills and calculate salary earnings based on the repair order descriptions, flat rate, and hours earned. Calculate manufacturer labor operation time used in the diagnostic process.
- Test light systems.
- Inspect headlights, brake lights, turn signals, and bulbs.
- Repair wiring harnesses and connectors.
- Test starter.
- Clean battery clamps, cables, connectors, and hold-downs; repairs or replaces as needed.
- Perform a slow/fast battery charge.
- Start a vehicle using jumper cables and a battery or auxiliary power supply according to manufacturer's recommended procedures.
- Maintain or restore electronic memory functions.

INTEGRATION LINKAGES

Mathematics, Math for Technology, Science, Electronics, Chemistry, Physics, Applied Communications, Technical Writing, Problem-Solving and Critical Thinking Skills, Occupational Safety and Health Administration (OSHA), Tennessee Occupational Safety and Health Administration (TOSHA), Environment Protection Agency (EPA), SkillsUSA-VICA, Interpersonal Skills, Employability Skills, Secretary's Commission on Achieving Necessary Skills (SCANS)

LEISURE CRAFT: ENGINE PERFORMANCE

STANDARD 5.0

Students will test, diagnose, service, and repair ignition systems as related to leisure CRAFT.

LEARNING EXPECTATIONS

The student will:

- 5.1 Analyze the function and operation of an ignition system related to leisure craft technology.
- 5.2 Diagnose ignition system problems.
- 5.3 Perform ignition system service.

PERFORMANCE STANDARDS: EVIDENCE STANDARD IS MET

The student:

- 5.1.A Illustrates the principles and operation of an ignition system.
- 5.1.B Distinguishes the function of various components of an ignition system.
- 5.2.A Performs ignition current draw tests and determines necessary action.
- 5.2.B Performs ignition circuit voltage drop tests and determines necessary action.
- 5.2.C Inspects starter relays and solenoids and determines necessary action.
- 5.2.D Inspects and sets ignition timing.
- 5.3.A Replaces starter relays and solenoids.
- 5.3.B Removes, repairs and/or installs switches, connectors, and wires of ignition control circuits.

SAMPLE PERFORMANCE TASKS

- Test the ignition electrical circuit.
- Inspect, repair, and replace primary ignition digital analog switch and secondary ignition.
- Inspect, repair, and replace CAM plate sensor.
- Inspect, repair, and replace crank sensors.
- Disassemble, clean, inspect, and test starter components.
- Replace starter components as needed or replace starter.
- Using case scenarios follow strategy based diagnostic procedure to verify the complaint, define the problem, isolate the problem, validate the problem, make the repair, and test the repair. Complete a repair order using technical writing skills and calculate salary earnings based on the repair order description and manufacturer allowance for each item on the work order. Calculate manufacturer labor operation time used in the diagnostic process.

INTEGRATION LINKAGES

Mathematics, Math for Technology, Science, Electronics, Chemistry, Physics, Applied Communications, Technical Writing, Problem-Solving and Critical Thinking Skills, Occupational Safety and Health Administration (OSHA), Tennessee Occupational Safety and Health Administration (TOSHA), Environment Protection Agency (EPA), SkillsUSA-VICA,

Interpersonal Skills, Employability Skills, Secretary's Commission on Achieving Necessary Skills (SCANS)

LEISURE CRAFT: ENGINE PERFORMANCE

STANDARD 6.0

Students will test, diagnose, service, and repair fuel delivery systems as related to leisure CRAFT.

LEARNING EXPECTATIONS

The student will:

- 6.1 Analyze the function and operation of fuel systems related to leisure craft technology.
- 6.2 Diagnose fuel system problems.
- 6.3 Perform fuel system service.

PERFORMANCE STANDARDS: EVIDENCE STANDARD IS MET

The student:

- 6.1.A Illustrates the principle operation of fuel systems related to leisure crafts.
- 6.1.B Distinguishes the function of the components of a fuel system related to leisure crafts.
- 6.2.A Inspects fuel pumps.
- 6.2.B Analyzes fuel pressure and resistance and determines necessary actions.
- 6.2.C Analyzes sequential and digital fuel injection systems and determines necessary actions.
- 6.2.D Determines the effect of atmospheric and barometric pressure effects on fuel system performance.
- 6.3.A Sets stoichiometric mixture.
- 6.3.B Inspects carburetors; cleans, inspects, tests components, and determines necessary action.

SAMPLE PERFORMANCE TASKS

- Select and replace fuel filters.
- Repair a carburetor.
- Adjust and repair a fuel injection system.
- Inspect fuel lines and determine necessary actions.
- Using case scenarios follow strategy based diagnostic procedure to verify the complaint, define the problem, isolate the problem, validate the problem, make the repair, and test the repair. Complete a repair order using technical writing skills and calculate salary earnings based on the repair order description and manufacturer allowances for each item on the work order. Calculate manufacturer labor operation time used in the diagnostic process.

INTEGRATION LINKAGES

Mathematics, Math for Technology, Science, Electronics, Chemistry, Physics, Applied Communications, Technical Writing, Problem-Solving and Critical Thinking Skills, Occupational Safety and Health Administration (OSHA), Tennessee Occupational Safety and Health Administration (TOSHA), Environment Protection Agency (EPA), SkillsUSA-VICA, Interpersonal Skills, Employability Skills, Secretary's Commission on Achieving Necessary Skills (SCANS)

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LEISURE CRAFT: ENGINE PERFORMANCE

STANDARD 7.0

Students will test, diagnose, service, and repair emission systems as related to leisure CRAFT.

LEARNING EXPECTATIONS

The student will:

- 7.1 Analyze the function and operation of emission systems as related to leisure crafts.
- 7.2 Diagnose emission systems relating to leisure crafts.
- 7.3 Perform emission system service on leisure crafts.

PERFORMANCE STANDARDS: EVIDENCE STANDARD IS MET

The student:

- 7.1.A Illustrates the principles and operation of an emission system.
- 7.1.B Distinguishes the function of the various components of an emission system.
- 7.1.C Analyzes emission management components.
- 7.1.D Performs emission testing.
- 7.1.E Follows Environmental Protection Agency guidelines concerning emissions in various leisure craft vehicles.
- 7.2.A Inspects and tests PVC valves in various leisure craft vehicles and determines necessary actions.
- 7.2.B Inspects and tests evaporative emission controls and determines necessary actions.
- 7.3.A Inspects, tests, and repairs closed loop systems.
- 7.3.B Inspects, tests, and repairs catalytic converters and checks exhaust emission.

SAMPLE PERFORMANCE TASKS

- Remove and replace PVC valves in various leisure crafts.
- Remove and replace catalytic converters.
- Analyze crankcase ventilation inspection.
- Using case scenarios follow strategy based diagnostic procedure to verify the complaint, define the problem, isolate the problem, validate the problem, make the repair, and test the repair. Complete a repair order using technical writing skills and calculate salary earnings based on the repair order description and manufacturer allowances for each item on the work order. Calculate manufacturer labor operation time used in the diagnostic process.

INTEGRATION LINKAGES

Mathematics, Math for Technology, Science, Electronics, Chemistry, Physics, Applied Communications, Technical Writing, Problem-Solving and Critical Thinking Skills, Occupational Safety and Health Administration (OSHA), Tennessee Occupational Safety and Health Administration (TOSHA), Environment Protection Agency (EPA), SkillsUSA-VICA, Interpersonal Skills, Employability Skills, Secretary's Commission on Achieving Necessary Skills (SCANS)

LEISURE CRAFT: ENGINE PERFORMANCE

STANDARD 8.0

Students will research, test, diagnose, service, and repair electrical mechanical systems as related to leisure CRAFT.

LEARNING EXPECTATIONS

The student will:

- 8.1 Analyze the function and operation of computer chips used in leisure crafts.
- 8.2 Demonstrate the use of diagnostic equipment.
- 8.3 Analyze the operation of automotive gauges, sending units, warning lights, speedometers, tachometers, electronic instrument panels and accessories.
- 8.4 Diagnose problems with gauges, sending units, warning lights, speedometers, tachometers, electronic instrument panels and accessories.
- 8.5 Perform repairs on gauges, sending units, warning lights, speedometers, tachometers, electronic instrument panels and accessories.

PERFORMANCE STANDARDS: EVIDENCE STANDARD IS MET

The student:

- 8.1.A Researches present and future data collector systems used in leisure crafts.
- 8.1.B Researches present and future global positioning satellite equipment used in leisure crafts.
- 8.1.C Analyzes sensors and determines necessary actions.
- 8.2.A Conducts diagnostic procedures using vibration diagnostic equipment.
- 8.2.B Diagnoses electrical problems using voltmeters, oscilloscope, and ohmmeters.
- 8.2.C Operates a dynamometer and determines necessary actions.
- 8.3.A Illustrates the functions and operation of gauges and sending units.
- 8.3.B Illustrates the functions and operation of warning lights, speedometers, tachometers, and electronic instrument panels.
- 8.4.A Inspects and tests oil temperature and pressure sensors and switches.
- 8.4.B Checks operation of parking brake indicator light system.
- 8.4.C Inspects and tests gauges and gauge sending units for cause of intermittent, high, low or no gauge readings and determines necessary action.
- 8.4.D Inspects and tests connectors, wires, and printed circuit boards of gauge circuits and determines necessary action.
- 8.4.E Diagnoses the cause of incorrect operation of:
 - warning devices and other driver information systems,
 - horn,
 - wiper speed control and park problems,
 - motor-driven accessory circuits,
 - cruise control systems,
 - radio (static and weak, intermittent, or no radio reception), and determines necessary action.
- 8.4.F Inspects and tests sensors, connectors, and wires of electronic instrument circuits and determines necessary action.

- 8.4.G Implements strategy based diagnostic procedure by verifying the complaint, defining the problem, isolating the problem, validating the problem, making repairs, and testing the repairs on driver information systems.
- 8.5.A Replaces oil temperature and pressure sensors and switches.
- 8.5.B Repairs wiring harnesses and connectors.
- 8.5.C Performs solder repair of electrical wiring.
- 8.5.D Repairs sensors and printed circuit boards of gauge circuits.

SAMPLE PERFORMANCE TASKS

- Operate record findings and make corrections to leisure craft components and systems based on diagnostic readings and manufacturer's service manual. Document findings and actions taken.
- Using case scenarios follow strategy based diagnostic procedure to verify the complaint, define the problem, isolate the problem, validate the problem, make the repair, and test the repair. Complete a repair order using technical writing skills and calculate salary earnings based on the repair order description and manufacturer allowances for each item on the work order. Calculate manufacturer labor operation time used in the diagnostic process.

INTEGRATION LINKAGES

Mathematics, Math for Technology, Science, Electronics, Chemistry, Physics, Applied Communications, Technical Writing, Problem-Solving and Critical Thinking Skills, Occupational Safety and Health Administration (OSHA), Tennessee Occupational Safety and Health Administration (TOSHA), Environment Protection Agency (EPA), SkillsUSA-VICA, Interpersonal Skills, Employability Skills, Secretary's Commission on Achieving Necessary Skills (SCANS)

LEISURE CRAFT: ENGINE PERFORMANCE

STANDARD 9.0

Students will properly test, diagnose, and repair leisure craft general electrical systems.

LEARNING EXPECTATIONS

The student will:

- 9.1 Interpret schematics, diagrams, and reference information used in leisure craft electrical diagnosis.
- 9.2 Use strategy-based diagnostics for determining the cause of a fault in an electrical circuit.
- 9.3 Demonstrate the use of equipment and tools for electrical testing and diagnosis.

PERFORMANCE STANDARDS: EVIDENCE STANDARD IS MET

The student:

- 9.1.A Interprets wiring diagrams.
- 9.1.B Uses wiring diagrams during diagnosis of electrical circuit problems.
- 9.1.C Extracts technical information from service manual, graphs, and charts.
- 9.2.A Uses a scientific process of elimination to narrow the list of possible causes of an electrical circuit fault.
- 9.2.B Uses the service manual and electronic service information (ESI) to aid in diagnosis of an electrical circuit fault.
- 9.2.C Implements strategy based diagnostic procedure by verifying the complaint, defining the problem, isolating the problem, validating the problem, making repairs, and testing the repairs.
- 9.3.A Checks electrical circuits using a test light, scan tool, digital multimeter (DMM), jumper wires, ammeter, voltmeter, oscilloscope, and ohmmeter.
- 9.3.B Locates shorts, grounds, opens, abnormal key-off battery drain, and resistance problems; determines cause and performs necessary action.
- 9.3.C Inspects and tests switches, connectors, relays and wires of electrical/electronic circuits; determines if there is a problem and performs necessary action.
- 9.3.D Inspects and tests fusible links, circuit breakers; determines if there is a problem and performs necessary action.

SAMPLE PERFORMANCE TASKS

- In teams, diagnose problems in a circuit and make recommendations to correct it.
- Diagnose and repair electrical systems such as ignition, charging, starting, fuel injections, power door locks, and horn operations
- Using case scenarios follow strategy based diagnostic procedure to verify the complaint, define the problem, isolate the problem, validate the problem, make the repair, and test the repair. Complete a repair order using technical writing skills and calculate salary earnings based on the repair order description and manufacture allowances for each item on the work order. Calculate manufacturer labor operation time used in the diagnostic process.

INTEGRATION LINKAGES

Mathematics, Math for Technology, Science, Electronics, Chemistry, Physics, Applied Communications, Technical Writing, Problem-Solving and Critical Thinking Skills, Occupational Safety and Health Administration (OSHA), Tennessee Occupational Safety and Health Administration (TOSHA), Environment Protection Agency (EPA), SkillsUSA-VICA, Interpersonal Skills, Employability Skills, Secretary's Commission on Achieving Necessary Skills (SCANS)

LEISURE CRAFT: ENGINE PERFORMANCE

STANDARD 10.0

Students will apply leisure craft engine performance technology knowledge and skills in a specific work-based or student initiative project learning experience.

LEARNING EXPECTATIONS

The student will:

- 10.1 Apply principles of leisure CRAFT to a school/work-based learning situation.
- 10.2 Integrate time management principles in organizing personal schedule to include school, work, social, and other activities.
- 10.3 Evaluate and apply principles of ethics as they relate to the school/work-based learning experience.
- 10.4 Employ principles of safety to the school/work-based learning experience.

PERFORMANCE STANDARDS: EVIDENCE STANDARD IS MET

The student:

- 10.1 Scores 80% or above on performance evaluations based on job readiness and knowledge of leisure CRAFT.
- 10.2 Designs a personal plan to include schedule of activities.
- 10.3 Records and assesses workplace events based on ethical implications.
- 10.4.A Scores 100% on safety performance and knowledge test covering leisure craft service equipment, tools, chemicals, OSHA and TOSHA rules and regulations.
- 10.4.B Applies safety rules and regulations to the work site.

SAMPLE PERFORMANCE TASKS

- Compose and maintain a work journal that includes general work site experiences, time management planning, and evaluation of ethical behavior.
- Create a training manual for a new employee outlining the safety considerations for the job.
- Keep a record of wages and hours-earned working on the job.
- Keep a record of personal work related expenses and budget according.

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SUGGESTED RESOURCES

Briggs and Stratton Power Equipment
Harley Davidson Motorcycle Company
National Automotive Technicians Education Foundation (NATEF) www.natef.org
A8 Engine Performance, CD-ROM, Interactive Computer Based Training, DVP/CDX,
1-888-873-2239
Multistate Academic and Vocational Curriculum Consortium, Inc. (MAVCC), *Power Product
Equipment Technicians: Outboard-Engine Systems and Service*
Outboard Engine Accessories Parts Catalogs
Outboard Marine Corporation (OMC) Service Manuals
Boating Magazine, New York, New York, 10019, 212-767-5585
Motor Boating and Sailing magazine, New York, New York 10019, 212-649-4099
American Power Boat Association (APBA)
Prope
Honda Motor Company
Yamaha
BMW (British Motor Works)
SkillsUSA-VICA, www.skillsusa.org